California Rice Commission
Propanil Management Plan

Final, April 27, 2010

Submitted Pursuant to the Requirements of the Central Valley Regional Water Quality Control Board (CVRWQCB) Conditional Waiver of Waste Discharge Requirements and Resolutions R5-2006-0077and R5-2010-0805

Introduction and Purpose

CVRWQCB Resolution No. R5-2006-0077 requires that Coalitions implementing water quality control program under the Conditional Waiver submit management plans when monitoring results show two or more observed "exceedances" over a three-year period. CVRWQCB Resolution R5-2010-0805 requires submittal of a proposed management plan for propanil.

The California Rice Commission (CRC) has implemented water quality monitoring and reporting pursuant to the CVRWQCB's approved Monitoring and Reporting Program (MRP) for rice discharges. Propanil monitoring at both assessment and core was included in the 2009 (Year 5) monitoring requirements. The CRC surpassed the monitoring requirements by conducting additional core site propanil monitoring on a weekly basis, June through July. Monitoring results obtained during the CRC's Year 5 (2009) showed a high detection (47 ug/L) of propanil at the assessment site location on Lurline Creek, Colusa County, CA. Two additional detections of 11 and 12 ug/L (CBD5 and SSB, respectively) indicate additional monitoring. As a result, CVRWQCB staff has proposed that propanil monitoring be conducted at assessment and core monitoring sites on a weekly basis during the month of June 2010. This monitoring would be considered "special project monitoring" under the conditions of the Irrigated Lands Regulatory Program (ILRP). The lack of an established numeric water quality objective for propanil provides an unclear regulatory path.

Background

Currently, there is no established numeric Water Quality Objective (WQO) for propanil. Throughout implementation of the ILRP, Regional Board staff has used "trigger values" as a basis for monitoring pesticides. This approach has been applied to the CRC, as well as to other Coalition Groups. The trigger values are to be used simply to indicate that a product should be included in a monitoring regime, and are not considered actionable regulatory limits. In 2004, Regional Board staff and the CRC team developed a decision framework that included ecological toxicity data as trigger values. The EPA ECOTOX database was reviewed to identify the lowest toxicity value (either LC_{50} or EC_{50}) for each of three species groups (green algae, invertebrate, and fish species). Use of other methodologies for review of ECOTOX data may identify other potential trigger values.

The USEPA approval of propanil for use on rice provides mitigation of ecological impacts through the 7-day water holding requirement.

Propanil is listed as "Tier 2" pollutant for development of a Total Maximum Daily Load (TMDL), meaning that it is of lower priority and therefore not scheduled for short-term development. Currently, insufficient data exist upon which to develop a TMDL.

Propanil is a state restricted pesticide in place by regulation. Additional restrictions may require a regulation amendment, which opens the public process. Regardless of the approach, the CRC needs to vet any additional restrictions with the CACs, DPR and the registrants in a collaborative process.

Propanil is intended to control broadleaf weed activity within rice paddies. Therefore, USEPA only calculated the risks to nontarget aquatic plants inhabiting areas adjacent to the propanil-treated rice paddies. Thus, the Risk Quotient (RQ) calculations are based on the EEC of propanil at the time of paddy water release. The RQs indicate that the Level of Concern (LOC) is not exceeded for risk to vascular aquatic plants inhabiting areas adjacent to rice paddies treated with propanil. However, the LOC is exceeded for risk to nonvascular aquatic plants inhabiting areas adjacent to rice paddies treated with propanil. RQs calculated for the potential use of propanil on turf indicate that the LOC is exceeded for aquatic vascular plants (including endangered species) and nonvascular plants.

Applicable Narrative Water Quality Objectives

The following Basin Plan narrative WQOs are applicable to management of propanil:

> **Pesticides**
> Pesticide concentrations shall not exceed the lowest levels technically and economically achievable.
>
> **Toxicity**
> All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life. This objective applies regardless of whether the toxicity is caused by a single substance or the interactive effect of multiple substances. Compliance with this objective will be determined by analyses of indicator organisms, species diversity, population density, growth anomalies, and biotoxicity tests of appropriate duration or other methods as specified by the Regional Water Board.
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> The Regional Water Board will also consider all material and relevant information submitted by the discharger and other interested parties and numerical criteria and guidelines for toxic substances developed by the State Water Board, the California Office of Environmental Health Hazard Assessment, the California Department of Health Services, the U.S. Food and Drug Administration, the National Academy of Sciences, the U.S. Environmental Protection Agency, and other appropriate organizations to evaluate compliance with this objective.
>
> The survival of aquatic life in surface waters subjected to a waste discharge or other controllable water quality factors shall not be less than that for the same water body in areas unaffected by the waste discharge, or, when necessary, for other control water that is

consistent with the requirements for "experimental water" as described in Standard Methods for the Examination of Water and Wastewater, latest edition. As a minimum, compliance with this objective as stated in the previous sentence shall be evaluated with a 96-hour bioassay.

In addition, effluent limits based upon acute biotoxicity tests of effluents will be prescribed where appropriate; additional numerical receiving water quality objectives for specific toxicants will be established as sufficient data become available; and source control of toxic substances will be encouraged.

Data Summary

From 2006 through 2009, the CRC and propanil registrants have funded weekly core site propanil monitoring during June and July. This four-year dataset for propanil at the CRC's core sites shows little concern over propanil. A single detection of 31.2 ug/L (CBD5 in 2006) falls above previously identified trigger values, as identified from review of the USEPA ECOTOX database. However, all other values fall well below the trigger values (next highest result is 3.3 ug/L). Dr. Lenwood Hall prepared a report that compared the toxicity of propanil and 3,4 – DCA (the primary metabolite) using ecological toxicity data from similar aquatic species and similar measurement endpoints and applied a probabilistic approach for analyzing the distribution of propanil using the 2006-2008 core site data (Hall, 2009).

In 2009, the MRP required that monitoring be conducted at upstream "assessment" sites, to confirm the appropriateness of core sites. The following sites are included in the monitoring program:

Monitoring Core Site Locations:

- **CBD5** - Colusa Basin Drain within the Colusa National Wildlife Refuge south of Highway 20 (core site)
- **BS1** - Butte Slough on Lower Pass Road northeast of Meridian (core site)
- **CBD1** - Colusa Basin Drain at Road 99E and near Road 108 west of Knights Landing (core site)
- **SSB** - Sacramento Slough downstream of the Karnack pumps (core site)
- **SR1** - Sacramento River at the Village Marina on Garden Highway (River site)

Monitoring Assessment Site Locations:

- **F –** Lurline Creek, upstream of CBD5 (assessment site)
- **G –** Cherokee Canal, upstream site for BS1 (assessment site)
- **H –** Obanion Outfall at DWR Pumping Plant on Obanion Road (assessment site)

The basis of the assessment site requirement was to evaluate the appropriateness of core sites as representative of newer generation, reduced-risk pesticides. The concern was that newer generation pesticides may be present at upstream sites at levels of concern, but could be degraded or diluted before reaching the core sites due to the short half-life of the products.

In addition, older chemistry such as propanil was a concern because it is a high use herbicide; so monthly monitoring was conducted under the ILRP at assessment sites during June and July 2009. The CRC maintained weekly propanil monitoring in collaboration with the registrant at

core sites during June and July 2009. A peak concentration of 47 ug/L was detected at Lurline Creek (site F) on 6/2/09. Two additional detections of 11 and 12 ug/L (CBD5 and SSB, respectively) fall in the range of that may indicate additional monitoring.

Review of Past Monitoring

Table 1 includes all of the propanil results from 2006 through 2009.

TABLE 1
Propanil Results

	Propanil Concentration (ug/L)							
Sample Date	**CBD5**	**BS1**	**CBD1**	**SSB**	**SR1**	**F**	**G**	**H**
6/7/2006	0.08	ND	0.06	ND	ND	--	--	--
6/21/2006	31.2	1.36	3.30	ND	0.18	--	--	--
6/23/2006	0.35	0.45	0.67	ND	ND	--	--	--
6/28/2006	0.24	0.88	0.18	ND	ND	--	--	--
7/6/2006	ND	0.79	ND	ND	ND	--	--	--
7/12/2006	0.07	0.46	0.23	ND	ND	--	--	--
6/6/2007	2.42	0.46	1.60	ND	--	--	--	--
6/13/2007	0.85	1.08	0.64	0.20	--	--	--	--
6/20/2007	0.20	0.37	0.13	0.08	--	--	--	--
6/27/2007	0.14	0.14	0.11	0.29	--	--	--	--
7/4/2007	0.36	0.37	0.06	0.05	--	--	--	--
7/11/2007	ND	0.11	ND	ND	--	--	--	--
7/18/2007	ND	ND	0.08	ND	--	--	--	--
7/24/2007	ND	ND	ND	ND	--	--	--	--
6/4/2008	ND	ND	ND	ND	ND	--	--	--
6/11/2008	ND	ND	ND	ND	ND	--	--	--
6/18/2008	1.34	1.29	ND	ND	ND	--	--	--
6/25/2008	0.24	0.16	ND	ND	ND	--	--	--
7/2/2008	ND	ND	ND	ND	ND	--	--	--

TABLE 1
Propanil Results

	Propanil Concentration (ug/L)							
Sample Date	**CBD5**	**BS1**	**CBD1**	**SSB**	**SR1**	**F**	**G**	**H**
7/16/2008	0.31	0.14	0.35	ND	0.23	--	--	--
7/23/2008	ND	ND	ND	4.18	ND	--	--	--
6/2/2009	1.9	ND	ND<0.10	ND<0.25	--	47	ND<0.25	ND<0.25
6/9/2009	11	1.7	3.5	0.36	--	--	--	--
6/16/2009	3.1	1.3	2.0	0.76	--	--	--	--
6/23/2009	0.64	0.66	0.26	ND	--	--	--	--
6/30/2009	ND	ND	ND	ND	--	--	--	--
7/7/2009	0.38	ND	0.065	0.25	--	ND	ND	ND
7/14/2009	ND	ND	ND	12	--	--	--	--
7/21/2009	ND	ND	ND	ND	--	--	--	--

notes:
2009 RL = 0.5 ug/L; EMA reported a similar RL for the 2006-2008 data.
ND = non-detect
-- no propanil sampling
Regional Board basis of concern
> 29 ug/L

2010 Propanil Management Plan

The approach to management of propanil includes propanil monitoring during 2010. Monitoring will be conducted at core and Lurline Creek, in conjunction with the Rice Pesticides Program, during the month of June and possibly into early July. The CRC maintains the authority to modify the monitoring schedule in the event there is a delay in planting due to weather related conditions, and will keep the CVRWQCB staff apprised of the monitoring schedule.

Implementation of additional outreach Includes approaches to increasing education and communication with propanil stakeholders.

- The CRC will coordinate with the registrants on a combined meeting with the California Association of Pest Control Advisers (CAPCA), the California Agricultural Aircraft Association (CAAA), Pest Control Operators of California (PCOC) and county agricultural commissioners (CACs)
- Provide propanil use information in the CRC newsletter and grower letter
- Include links to the regulations and permit conditions on the CRC website (will check for Executive Committee and/or Board approval)

Any additional monitoring information that affects this management plan shall be sent to the Regional Water Board staff.

Responsibilities for Implementation

The CRC, United Phosphorus, Inc. (UPI) and RiceCo, the propanil registrants, will work collaboratively with equal fiscal responsibility for the propanil monitoring and lab analysis. In addition, the CRC will request that the Department of Pesticide Regulation, Enforcement Branch, reinsert Section 6462. Propanil. California Code of Regulations (Title 3. Food and Agriculture) Division 6. Pesticides and Pest Control Operations into the Pesticide Use Enforcement Program Standards Compendium Volume 3, Restricted Materials and Permitting, Appendix C, Recommended Permit Conditions. The Department of Pesticide Regulation inserted the propanil regulation into the Rice Pesticide Program permit conditions document in 2004. The purpose was to provide county agricultural commissioners, growers, applicators and pest control advisers (PCAs) with information on recent regulation revisions. In addition, the CRC will provide information in the newsletter, grower letter, Board meetings, committee meetings and grower meetings. The following information from the existing California Code of Regulations[1] will be disseminated and discussed:

§6462. Propanil.

The provisions of this section apply to propanil used in Butte, Colusa, Glenn, Placer, and Yuba counties; the portion of Sutter County situated north of Sankey Road; and the portion of Yolo County situated north of State Highway 16.

(a) No emulsifiable concentrate formulation shall be applied.

(b) Applications using aircraft shall be made in accordance with the following requirements:

(1) Aerial applications shall not be made within four miles of cultivated commercial plantings of prunes.

(2) No more than 720 acres may be treated by aircraft within each county per day.

(3) Each operating aircraft nozzle shall produce a droplet size, in accordance with the manufacturer's specifications, not less than 600 microns volume median diameter (Dv0.5) with not more than ten percent of the diameter by volume (Dv0.1) less than 200 microns.

(c) Notwithstanding (b)(1), the Butte county agricultural commissioner may allow the California Rice Research Station to make aerial applications within four miles of cultivated commercial plantings of prunes according to a work plan submitted to and approved by the Butte county agricultural commissioner. The work plan shall include: the largest individual site that may be treated per application; total acres that may be treated per day which shall not exceed 45 acres; the minimum distance that must be maintained from cultivated commercial plantings of prunes and the application site; and any additional procedures to protect cultivated commercial plantings of prunes within four miles of the application site.

[1] Title 3. Food and Agriculture; Division 6. Pesticides and Pest Control Operations; Chapter 2. Pesticides; Subchapter 4. Restricted Materials; Article 4. Use Requirements

(d) Applications using ground equipment shall be made in accordance with the following requirements:

(1) Ground applications shall not be made within one mile of cultivated commercial plantings of prunes, except as provided in (A) and (B) below.

(A) The commissioner may allow applications to be made to sites not less than one-half mile from cultivated commercial plantings of prunes if the following requirements are met:

1. Prior to the application, the operator of the property shall provide to the commissioner a recommendation written by a licensed pest control adviser stating there are no other feasible pest management alternatives;

2. Onsite monitoring of wind speed and wind direction shall be conducted by the applicator in a manner approved by the commissioner throughout the entire application. A record of recorded data shall be retained for one year; and

3. A positive airflow away from cultivated commercial plantings of prunes is present throughout the entire application.

(B) The commissioner may allow applications to be made to sites less than one-half mile from cultivated commercial plantings of prunes when the following requirements are met in addition to the requirements of (A):

1. The commissioner shall provide onsite monitoring of all applications.

2. The commissioner shall provide for notice to, and opportunity to comment by, any owner of cultivated commercial plantings of prunes within one-half mile of the application.

(2) Each operating nozzle shall produce a droplet size, in accordance with the manufacturer's specifications, not less than 500 microns volume median diameter (Dv0.5) with not more than ten percent of the diameter by volume (Dv0.1) less than 200 microns.

NOTE: Authority cited: Sections 11456, 12781, 14001, 14005, and 14102, Food and Agricultural Code. Reference: Sections 14006 and 14007, Food and Agricultural Code.

Schedule

Monitoring will occur as specified in the CRC MRP Resolution Order No. R5-2010-0805. In 2010, weekly sample collection for propanil analyses will take place at the core sites and Lurline Creek in conjunction with the Rice Pesticides Program during the month of June and possibly into early July. The CRC maintains the authority to modify the monitoring schedule in the event there is a delay in planting due to weather related conditions.

Re-evaluation of the above strategy and its effectiveness will occur with Regional Board staff after one year of sampling. At that time, this management plan shall be modified with any additional information that may affect the monitoring strategy as presented in this document.

Should a modified sampling plan would necessary, the plan will be resubmitted to Regional Board staff for approval.

Reporting

A progress report on the management plan monitoring should be due two weeks within receipt of all data for the season. This progress report will be a narrative of the results found to date under the management plan sampling and analysis. Sampling results for the entire year are to be reported as a separate section in the CRC annual monitoring report due 31 December 2010.

Responsible parties

The CRC is responsible for coordinating monitoring and reporting with UPI and RiceCo under this management plan.

The CRC is responsible for the newsletter, grower letter, and outreach to CRC Board members, committee members and growers.

The county agricultural commissioners, through Department of Pesticide Regulation oversight, are responsible for enforcement and compliance of the propanil regulations.

The Regional Water Board is responsible for responding to the report, An Evaluation of Propanil and 3,4 - DCA Aquatic Toxicity, Surface Water Monitoring and Ecological Risk Issues for California's Sacramento River Watershed prepared by Dr. Lenwood Hall, May 2009. The report should identify concerns and deficiencies as defined by the Regional Water Board. Central Valley Water Board has reviewed Dr. Halls report and responded to the CRC on 31 December 2009.

Regional Water Board staff must approve any modifications to this management plan.